

REMARKS

Reexamination and reconsideration of this application as amended is respectfully requested.

Claims 7-9 have been withdrawn.

New Claims 15 and 16 have been added by amendment.

Claims 1-6 and 10-16 remain in the application.

Brief Description of the Invention

The invention is a canister for spent nuclear fuel. The canister includes a canister shell, a top shield plug disposed within the canister and a leak-tight closure arrangement. The closure arrangement includes a shear ring mated with an annular recess in the canister shell. The shear ring is welded to the canister shell and to the top shield plug. An outer seal plate is disposed above the shear ring and is welded to the shield plug and the canister.

Rejection Under 35 U.S.C. 102(b):

Claims 1, 5 and 10

Claims 1, 5 and 10 have been rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 4,636,645 to B.A. Kessinger.

Examiner has stated that the shear ring reads on element 80, which is welded to shield plug 72 at 84 and to the canister shell at 68. Cover 114 is welded to element 128 at edge 132. Element 128 is welded to the canister shell at lower edge 130.

Response

1. Examiner has based the rejection on the statement, "The shear ring reads on element 80". Applicants respectfully point out that this statement is not the case.

Kessinger's element 80 is "canopy element 80". "Element 80 can be fabricated, for example, by sawing away the outer portion of a hoop of stainless steel tubing." (col. 4, lines 52-54).

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A canopy element provides flexibility, i.e. a flexible connector. Consistent with the function of providing flexibility, a canopy does not bear load. Instead, load is carried by another member. Kessinger discloses a canopy made by sawing a tube in half and joining the ends to form a hoop. Kessinger's canopy element is clearly flexible.

A shear ring is not ordinarily flexible. Under load, a shear ring either retains its shape or fails by shearing. A shear ring is capable of bearing load. Under excess load, a shear ring fails by design. The shear ring provides a load path to guide the direction of shearing. Shearing does not provide flexibility. A shear ring either shears or does not shear. That is, a shear ring functions by either retaining its shape or by failing and breaching the connection.

A canopy is a flexible member that can be deformed and still retain its integrity. A shear ring is a non flexible member that either retains its shape or fails. Applicants respectfully point out that Kessinger's element 80 is a flexible canopy. The instant shear ring does not read on a flexible canopy.

Furthermore, attention is drawn to Kessinger's shear keys 88, 90. Shear keys are the element in the Kessinger patent that most closely reads on the instant shear ring. However, Kessinger's shear keys do not bear load in Fig. 4. Also, Kessinger's shear keys are not a containment boundary in the canister as distinguished from the instant shear ring. The shear keys are not held in place by welds.

2. The instant Claim 5 is particularly distinguished from the Kessinger patent. The instant application discloses shear ring 30 as load bearing. Kessinger's canopy element 80 is flexible and therefore inherently non load bearing. Likewise, canopy element 80 cannot be used for lifting. Kessinger's shear keys 88, 90 are not attached to adjacent structural elements. Therefore they cannot be used for lifting.

In the instant invention, the annular recess 32a in cooperation with shear ring 30 allows for the canister to be picked up via a lifter and bolts in bolt holes drilled in the shield plug. (page 4, lines 4-5).

Neither Kessinger's canopy element 80 nor shear keys 88, 90 provide for such lifting. Of course, Kessinger's container can be lifted, but only the application of a lifting force through bolt 122 and not through either shear keys 88, 90 or canopy element 80.

If bolt 122 were absent, the container could not be lifted via secondary cover 114. Shear keys 88, 90 do not facilitate lifting.

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Furthermore canopy element 80 would not facilitate lifting because its function is to flex and deform.

3. Examiner makes no specific mention of the relevance of the Kessinger patent to Claim 10. Claim 10 further narrows the scope of Claims 1 and 4. Claim 1 has been shown to be novel. Accordingly, Claim 10 is novel as well.

Neither Kessinger's canopy element 80 nor Kessinger's shear keys 88, 90 function as the instant shear ring does in a spent fuel canister. Accordingly, the rejection under 35 U.S.C. 102(b) has been overcome by the remarks.

Rejection Under 35 U.S.C. 103(a): Claims 2-4 and 11-14

Claims 2-4 and 11-14 have been rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 4,636,645 to B.A. Kessinger in view of U.S. Patent 5,548,992 to B.H. Hallett et al.

Examiner has stated that Claims 2 and 3 recite a multi-piece construction rather than a single unitary construction. Examiner states that applicant has admitted this to be an obvious modification. Examiner states that Claims 2 and 3 are further considered obvious in view of MPEP 2144.04, part V. Examiner states that as to claim 4, Kessinger shows the cover plate welded to the canister shell. Examiner states that it would have been prima facie obvious to have also welded the cover plate to the shield plug because such is no more than an art recognized conventional expedient. Examiner states further that it is conventional in the art and hence obvious from the teaching of Hallett et al. or applicants' specification (page 6 lines 15+) to provide structure for leak testing.

Response

Examiner's reference to MPEP 2144.04, part V regarding Claims 2 and 3 is off the mark. Kessinger's canopy element 80 is not a shear ring. Canopy element 80 does not function as a shear ring. Nor do Kessinger's shear keys 88, 90 provide a containment boundary in the canister. Therefore Kessinger neither discloses nor suggests the instant shear ring and attachment to form a containment boundary in the instant canister. MPEP 2144.04, part V does not alter that.

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The independent claims have been shown to be novel. Accordingly, dependant claims that further narrow the independent claims are novel as well.

Accordingly, the rejection under 35 U.S.C. 103(a) has been overcome by the amendment and remarks.

New Claims 15 and 16

New Claims 15 and 16 are added by amendment. Support for Claim 15 is found in Claims 1 and 4. Support for Claim 16 is found in the specification on page 6, lines 9-11 and in Fig. 4.

New Claims 15 and 16 are presented to emphasize the load bearing function of the shear ring 30 facilitated by an annular groove in the canister shell and seal welds.

Status of Claim 6

Examiner has listed Claim 6 as withdrawn from consideration.

In the Amendment filed August 12, 2002, on page 2, Applicants showed that Claim 6 read on provisionally elected specie S. Specie S includes Claims 1-6 and 10-14.

Clarification is requested.

Election of Group I and Specie A

Examiner has stated that applicant has made an election without traverse.

Examination of the response of March 6, 2002, confirms that the election was made with traverse. Any misunderstanding is regretted.

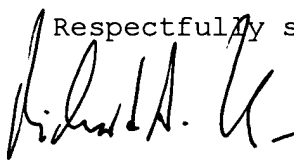
Conclusion

Allowance of Claims 1-6 and 10-16 is respectfully requested.

A sheet of claims as amended is mailed herewith.

No additional fee is required.

Respectfully submitted,

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Claims in the Application

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For: Closure Mechanism And Method For Spent
Nuclear Fuel Canisters

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Claim 1. (Original) A canister for storing, transporting, or disposing of spent nuclear fuel, said canister comprising a canister shell, a top shield plug disposed within said canister, and a leak-tight closure arrangement, said closure arrangement comprising:

CI a shear ring forming a containment boundary of said canister, and weld means for welding the shear ring to said canister shell and to said top shield plug.

Claim 2. (Original) The canister of claim 1 wherein said shear ring comprises a plurality of pieces welded together.

Claim 3. (Original) The canister of claim 1 wherein said shear ring comprises three pieces welded together.

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Claim 4. (Original) The canister of claim 1 further comprising an outer seal plate disposed above said shear ring and welded to said shield plug and said canister.

Claim 5. (Original) The canister of claim 1, wherein said shear ring is used as the load bearing member and the welds are seal welds.

Claim 6. (Original) The canister of claim 1, wherein mating surface of the shear ring and the canister shell are tapered.

Claim 7. (Withdrawn)

Claim 8. (Withdrawn)

Claim 9. (Withdrawn)

Claim 10. (Original) The canister of claim 4 further comprising a space for air or gas between said outer seal plate and said shield plug.

Claim 11. (Previously added) The canister of claim 10 including leak testing components.

Claim 12. (Previously added) The canister of claim 11 wherein said leak testing components comprise an L-shaped hole connected to a

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vertical channel in said shield plug, said channel communicating with the interior of said canister.

Claim 13. (Previously added) The canister of claim 12 further comprising a pipe plug disposed in a vertical leg of said L-shaped hole.

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Claim 14. (Previously added) The canister of claim 13 further comprising an outer seal plate boss on said outer seal plate, a pipe plug in said outer seal plate boss, and a seal plug in said outer seal plate for sealing an opening in said seal plate.

Claim 15. (New) A spent nuclear fuel canister comprising a canister shell, a top shield plug disposed within the canister, and a leak-tight closure, the closure comprising:

a load bearing shear ring forming a containment boundary in the canister, and seal welds attaching the shear ring to the canister shell and to the top shield plug.

Claim 16. (New) The spent nuclear fuel canister of Claim 15 wherein the shear ring is mated with an annular groove in the canister shell.
